GENERAL FISH SCREENING CRITERIA

California Department of Fish and Game
(2/93)

1. Structure Placement

A. Streams and Rivers (flowing water):

The screen face shall be parallel to the flow and adjacent bankline with the screen at or streamward of the annual low flow water's edge. The bankline shall be warped to match the screen structure, eliminating eddies in front, upstream, and downstream of the screen.

Intake structures shall not be constructed shoreward from the normal bankline in locations where parallel velocities past the screen cannot be provided.

B. Lakes and Reservoirs (nonflowing waters):

Diversion structures and/or intakes shall be constructed offshore to minimize fish contact with the diversion. Velocity from any direction toward the screen shall not exceed the approach velocities in No. 2 below.

2. Approach Velocity (Local velocity component perpendicular to screen face)

A. The approach velocity shall be uniformly distributed across the face of the screen.

B. For continually cleaned screens the approach velocity shall not exceed 0.33 feet/second. Fish screens shall be considered continually cleaned when a cleaning cycle can be completed in 5 minute intervals or less.

C. Screens which are not continually cleaned shall be designed with an approach velocity of 0.0825 feet/second and shall be cleaned before the approach velocity becomes 0.33 feet/second.

D. Fish screens shall be cleaned as frequently as necessary to prevent impedance of flow and violation of the approach velocity criteria.

E. The actual wetted screen area, excluding area affected by structural components, required at the minimum stream stage is calculated by dividing the maximum diverted flow by the allowable approach velocity.

3. Sweeping Velocity (Velocity component parallel to screen face)

In flowing streams, the sweeping velocity shall be at least two times the allowable approach velocity. Screen faces shall be placed flush with any adjacent screen bay piers or walls to allow an unimpeded flow of water parallel to the screen face.

Criteria developed pursuant to Fish and Game Code § 1600, 5900, and 6100

4. Screen Openings

A. The screen surface shall have a minimum open area of 1/2 square foot per square foot of screen (50% or greater porosity).

B. Round openings in screening shall not exceed 5/32 inch.

C. Square openings in screening shall not exceed 5/32 inch measured diagonally.

D. Slotted openings shall not exceed 3/32 inch in width.

5. Screen Construction

A. Screens may be constructed of any rigid material, perforated, woven, or slotted that provides water passage while physically excluding fish.

B. Stainless steel or other corrosion resistant material is recommended for the screening fabric to reduce clogging due to corrosion.

C. Plans shall be provided to the Department which show that all the applicable screening criteria have been met before written approval can be granted by the Regional Manager.

D. All fish screens constructed after 1982 shall be designed and constructed to satisfy the current criteria. Owners of existing screens approved by the Department prior to 1982 shall be require to upgrade their facilities to satisfy current criteria as 1) the screen components deteriorate and require replacement (i.e., change mesh size or mesh orientation when the mesh on panels or rotary drum sections needs replacing), or 2) during modification or reconstruction of the intake facilities (i.e., change screen alignment or increase screen area to satisfy approach velocity requirement), or 3) when the owner proposes to increase the rate of diversion which would result in violation of the approach velocity criteria without the construction of additional screen area.

E. Supplemental criteria may be issued by the Department to accommodate new fish screening technology or to address species specific or site specific circumstances.

F. Written variances to these screening criteria may be granted with the approval of the Regional Manager and concurrence with the Environmental Services Division and Inland Fisheries Division chiefs.